



# Greater Objective Numeracy Protects Pandemic Grades but Endangers Academic Interest

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## INTRODUCTION

- The COVID-19 pandemic has greatly impacted educational experiences<sup>1,2</sup>
- Prior research has found that greater numeracy relates to positive academic<sup>-3</sup> and life-related outcomes<sup>4-8</sup>
- When faced with disruption (e.g., a pandemic) in the middle of a semester, students may experience increased stress and learning challenges<sup>9,10</sup>
- While we expected numeracy to protect high ability students from pandemic-related disruption, this was not the case
- In the present research, **numeracy protected grades from COVID-19 disruption, but compromised intentions to take future math classes**

## METHOD

- N= 399 Psychology 2220 students (81% female; 22% Pell Grant recipients)
- At the beginning and end of the semester:
  - *Objective numeracy* (ONS; e.g., "Imagine that we flip a fair coin 700 times. What is your best guess about the number of times the coin would come up heads in 700 flips?")<sup>7</sup>
  - *Interest in math* (e.g., intentions to take more math classes)
- At the end of the semester only:
  - *COVID-19 disruption* (i.e., to motivation and learning strategies, living situation, health, finances)

## EFFECTS OF NUMERACY

At beginning of semester, numeracy predicted:

- Greater interest in math
- Better health outcomes
- Better financial literacy and outcomes
- Better decision-making ability

At end of semester, numeracy predicted:

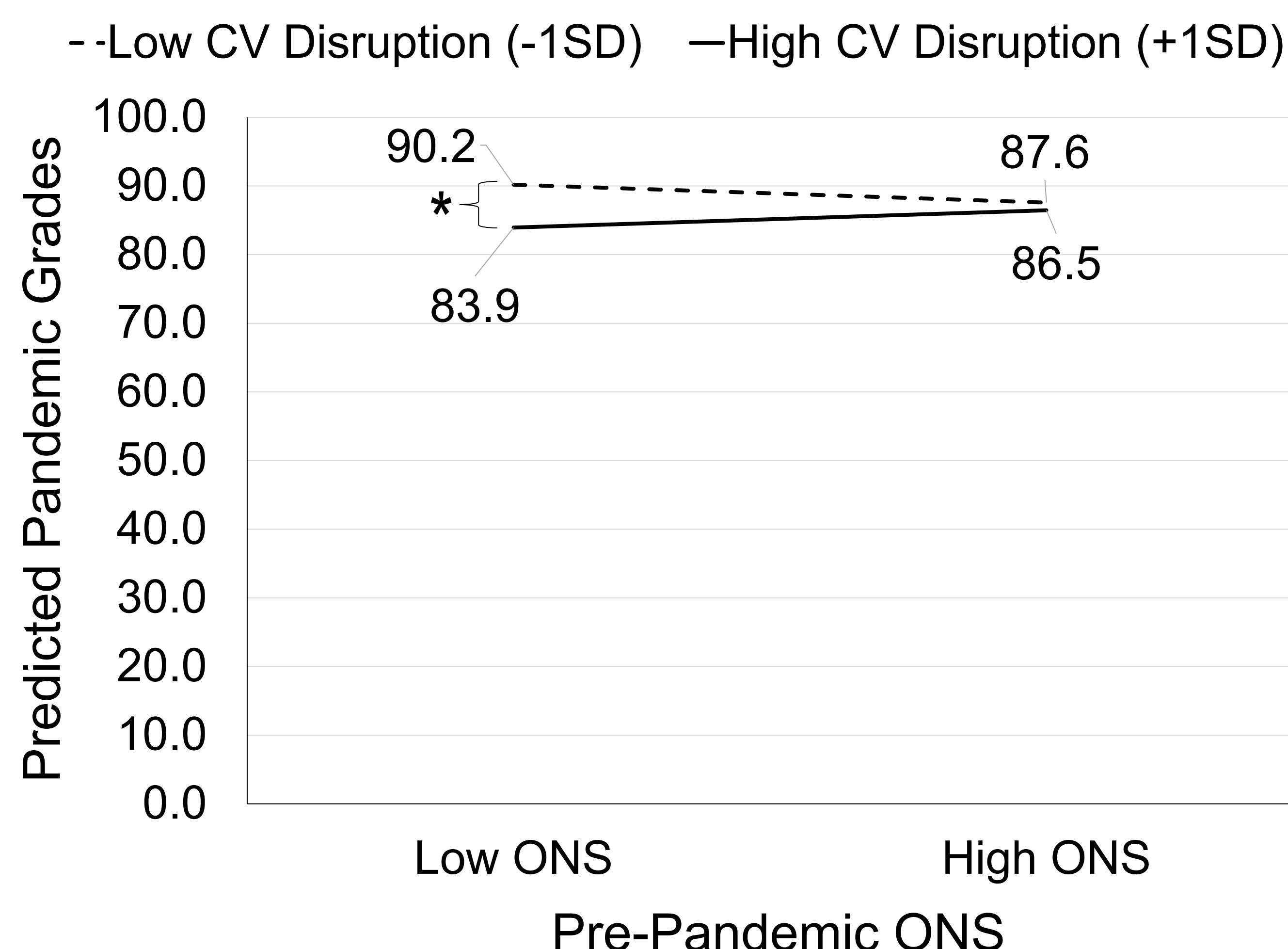
- Better grades
- Less disruption to living situation, health, and finances

## COVID-19 DISRUPTION

- Women and Pell Grant recipients experienced more disruption
  - Women were more disrupted in personal life
  - Pell Grant recipients were more disrupted in Psychology 2220

## CONSEQUENCES OF COVID-19 DISRUPTION

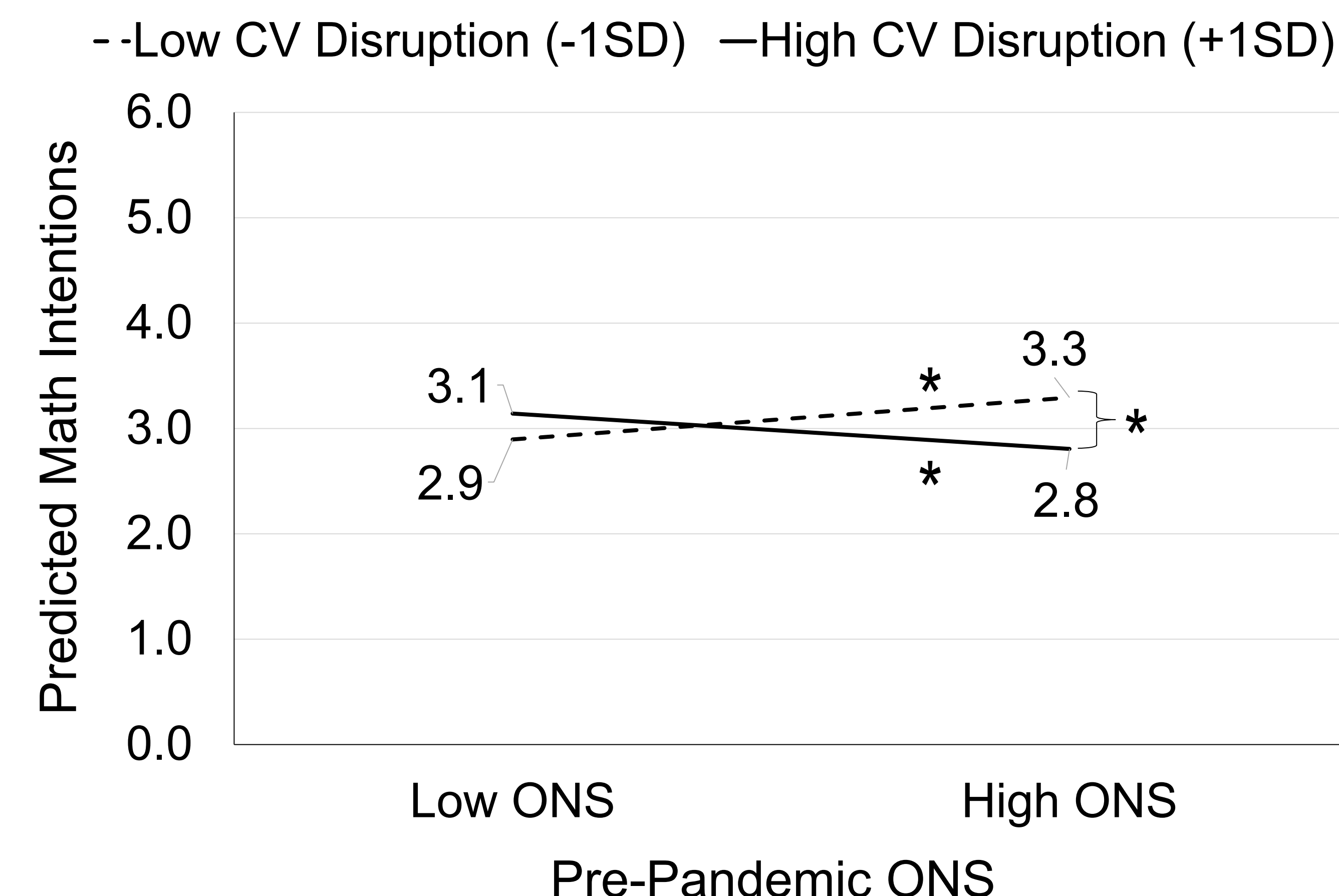
### Greater numeracy protected student grades



For those lower (-1SD) in numeracy (ONS), higher COVID-19 (CV) disruption was associated with lower grades; whereas grades of those higher in numeracy (+1SD) were not affected.

## CONSEQUENCES OF COVID-19 DISRUPTION

### However, those higher in numeracy were vulnerable to disrupted math intentions



For those higher (+1SD) in numeracy (ONS), higher COVID-19 (CV) disruption was associated with a reduction in math intentions, while those with lower disruption had increased math intentions.

## DISCUSSION

- Numeracy is associated with better health, financial, and academic outcomes, including better grades during a pandemic
- However, high-ability students may also be at risk for disengagement when faced with unexpected difficulty

## REFERENCES

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